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Remarks

In the non-final Office Action, claims 1 and 7 are rejected under 35 USC § 103a as being unpatentable over Chang (U.S. Patent No. 6,160,287) in view of Manley et al. (U.S. Patent No. 5,108,939). The Examiner claims that Chang teaches a memory cell having a connecting layer being formed over and in contact with both a small sidewall spacer and the main floating gate region. Applicants respectfully submit that the Chang patent does not lay claim to such features. As it is clearly stated in column 4, line 67 to column 5, line 7 of the Chang patent, "the metal silicide [sic] layer 80 is defined as the select gate layer in the flash memory. The select gate layer 80 extends towards a direction perpendicular to the extending direction of the controlling gate. that [sic] is, the polysilicon layer 60. Both the spacer 76 and the metal silicide [sic] layer 80 provide a good conductance, so that the resistance of the polysilicon of the gate is reduced to about 1/3 to 1/4 of the conventional one."

The above cited passage made obvious two points: first, the metal silicide connecting layer 80 and the spacer is part of a select gate formed alongside a memory cell but it is not at all part of the memory cell. In contrast, the sidewall spacer is an integral part of the memory cell in the claimed invention and it is connected to the floating gate of the memory cell exclusively to form the tunneling region of the floating gate. Second, being a part of the select gate, the metal silicide layer in the Chang patent could not have been in any electrical contact with the floating gate of the memory cell. In claim 1 of the claimed invention, the relation of the spacer to the floating gate is clearly stated as "a floating gate formed on said substrate, said floating gate including a main floating gate region and a small sidewall spacer electrically coupled together." Therefore, the Chang patent does not disclose the claimed invention.

In the Office Action, the Examiner states that the Chang patent fails to teach a first insulating layer including a first insulating portion separating a small sidewall spacer from a substrate and a second insulating portion separating a main floating gate region from the substrate, wherein the first insulating portion is thinner than the second insulating portion. According the Examiner, the missing teaching is provided by Manley et al. patent.

Applicants assert that the Manley et al. patent cannot be properly combined with the Chang patent because the sidewall spacer in the Manley et al. patent is part of a floating gate, not part of a select gate, as it is taught in the Chang patent. As it is clearly stated in column 7, lines 5-8, of the Manley et al. patent, "An anisotropic etch, for example using chlorine plasma, is then used to create narrow floating gate extensions 514 and 515 (which is the spacer)." In addition, the Manley et al. patent does not at all provide the teaching of having a connecting layer being formed over and in contact with both the small sidewall spacer and the floating gate. Therefore, Applicants submit that claims 1 and 7 are non-obvious and patentable in view of the cited patents.

In the Office Action, claim 6 is rejected as being unpatentable over Chang (U.S. Pat. No. 6,160,287) and Manley et al. (U.S. Pat. No. 5,108,939 as applied to claims 1 and 7 above, and further in view of Wang (U.S. Pat. No. 6,207,507). Applicants asserted since claim 1 is patentable for reasons cited above, claim 6, being a dependent claim on claim 1, should be patentable as well.

In the Office Action, claim 8 is rejected under 35 USC 103(a) as being unpatentable over Chang (U.S. Pat. No. 6,160,287) and Manley et al. (U.S. Pat. No. 5,108,939) as applied to claims 1 and 7 above, and further in view of Shone et al. (U.S. Pat. No. 5,618,742). Applicants assert that since claim 1 is patentable for the reasons cited above, claim 8, being a dependent claim on claim 1, should be patentable as well.

In the Office Action, claims 3-5 are objected to because of their dependency on cancelled claim 2. In response, Applicants amend the dependency of said claims to claim 1 as shown in the amended claims in the beginning section of this response.

Conclusion

In view of the remarks made herein, Applicants request reconsideration of claims 1, and 3-8. A Notice of Allowance is earnestly solicited.

CERTIFICATE OF MAILING

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22304

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Respectfully submitted,



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